

**REVISED TMDL IMPLEMENTATION PLAN
FOR
TOBESOFKEE CREEK WATERSHED**

SEDIMENT (BIOTA IMPACTED)
in
COLAPARCHEE CREEK
MONROE AND BIBB COUNTIES, GEORGIA

FECAL COLIFORM
in
ROCKY CREEK
BIBB COUNTY, GEORGIA
&
TOBESOFKEE CREEK
MONROE AND BIBB COUNTIES, GEORGIA

Developed by
Middle Georgia Regional Development Center
in coordination with the
Tobesofkee Creek Advisory Committee

July 11, 2003

Tobesofkee Creek Watershed Revised TMDL Implementation Plan

Overview

The stream segments under study are:

- Colaparchee Creek, Monroe and Bibb counties
- Rocky Creek, Bibb County
- Tobesofkee Creek, (from Cole Creek to Todd Creek), Monroe County
- Tobesofkee Creek, (from Lake Tobesofkee to Rocky Creek) Bibb County

(Please see attached map.) Different stream segments will be covered separately throughout the document as each are impacted by different water quality standards.

Plan Preparation....All Creeks

The revised implementation plan for the Tobesofkee Creek Watershed was developed by the Middle Georgia Regional Development Center (RDC) in conjunction with the Tobesofkee Creek Advisory Committee. This committee included, but was not limited to, stakeholder representatives from the forestry industry, agriculture, the Georgia Forestry Commission, the Georgia Soil and Water Conservation Commission, the University of Georgia, the poultry industry, the Department of Natural Resources, County Commissioners, County staff, Ocmulgee RiverKeeper representatives, interested private citizens, Macon Water Authority representatives and property owners who owned 10 acres or more of property contiguous to the affected stream segments. The Middle Georgia RDC was under Georgia Environmental Protection Division (EPD) contract to prepare a TMDL implementation plan.

The Committee met over a series of three meetings to formulate the revised implementation plan. The first meeting and public hearing held on May 12, 2003 at the Middle Georgia Regional Development Center offices and was primarily informational in nature (see attached agenda and accompanying minutes). The EPD brochure entitled “Watershed Wisdom – Georgia’s TMDL Program” was distributed to attendees. The video of the same title was shown as well. There were 12 persons who attended and participated in this first meeting (see attached sign-in sheet.)

The second meeting was held on June 9, 2003 at the Middle Georgia Regional Development Center offices in Macon (see attached agenda and accompanying minutes). In addition, a press release (see attached press release) was sent to the local papers to better inform the general public. There were 30 persons who attended and participated in this second meeting (see attached sign-in sheet.) Public comments were solicited and input was used to create the draft revised implementation plan. A short *Macon Telegraph* notice was printed informing the public of the second meeting in the June 8, 2003 edition, as well as the third and final meeting in the July 8, 2003 edition.

The third and final meeting was held on July 8, 2003 at the Middle Georgia Regional Development Center offices in Macon to allow the committee to make final comments on the draft revised implementation plan before final submittal to EPD (see attached agenda and accompanying minutes.) There were 13 representatives who attended and participated in this third meeting (see attached sign-in sheet.)

Education/Outreach Activities (All Streams)

There were several possible education and outreach activities identified by the stakeholders through the three meetings:

- Ocmulgee Riverkeeper to disseminate information regarding streams during an Earthday event;
- Press releases and presentations by various partners, including Georgia Forestry Commission, Cooperative Extension, EPD, local governments, Macon/Bibb Clean and Beautiful and Ocmulgee Riverkeeper:
 - Civic Groups
 - Community Organizations
 - Homeowners Associations (Lake Wildwood Association)
 - Homebuilders Associations
- Macon Water Authority Press Releases concerning CMOM efforts and water quality issues through various outlets, including newsletter articles informing property owners who have a sewer line crossing their stream to keep an eye out for any problems and notify MWA as soon as possible;
- Institution of an Adopt a Stream program(s) by Ocmulgee Riverkeeper;
- Macon Water Authority to sponsor additional educational curricula in local schools;
- Press Releases resulting from the Department of Community Affairs' Ocmulgee River Assessment Report; and
- Georgia DNR to distribute video and manual from Alabama RC&D concerning unpaved road practices.

TMDL Data Overview... Biota (Sediment)

The Biota Impacted designation indicates that studies have shown a modification of the biological community, more specifically, fish. In 1990, 1998, and 1999, the Department of Natural Resources (DNR) Wildlife Resources Division (WRD) conducted studies of fish populations. WRD used the Index of Biotic Integrity (IBI) and modified Index of Well-Being (IWB) to identify affected fish populations. Stream segments with fish populations rated as Poor or Very Poor were included in the Partially Supporting list. The cause of low IBI scores in the lack of fish habitat is presumably due to stream sedimentation. To determine the relationship between the in-stream water quality and the source loadings, each watershed was modeled. The analysis performed to develop sediment TMDLs for the 303(d) listed watersheds utilized the Universal Soil Loss Equation (USLE), which predicts the average annual soil loss caused by erosion.

A sustainable aquatic ecosystem requires a healthy habitat. A major disturbance to stream habitats is erosion and sedimentation. Through a source assessment analysis, non-point sources were considered to be most responsible for the elevated sediment loads in Little Deer Creek and its Tributary. Non-point sources of sediment are diffuse sources that cannot be identified as entering the water body at a single location. These sources generally involve land use activities that contribute sediment to streams during a rainfall runoff event. Eroded soils from forests, cropland, mining sites, and other land can be transported to Georgia streams through runoff. Excessive sediment that reaches the water bodies can cause several changes to the stream. It can make the streams shallower or wider, affecting the stream's temperature, dissolved oxygen, flow

rate and velocity. It can affect the ability of the stream to assimilate pollutants. It can change the diversity of the fish populations and other biological communities. As sediment is carried into the stream, it can change the stream bottom and smother sensitive organisms.

Background....Colaparchee Creek - Sediment

The impacted segment of Colaparchee Creek is a 13 mile segment upstream of Lake Wildwood, and is located partially in Monroe and Bibb counties. Colaparchee Creek is currently on the 303(d) list in the State of Georgia for violating the water quality standards for Biota (Sediment). The water use classification for Colaparchee Creek is fishing and it is found to be partially supporting this designated use.

The sampling point was on Sanders Road, 1.9 miles southeast of the center of Bolingbroke on July 6, 1998. Comments taken from the 305(b) report include:

“The primary problem at this site appeared to be the high rate of sediment deposition. The high sediment load resulted in little instream cover, highly embedded bottom substrates, and poor epifaunal habitat. Highly unstable stream banks, little vegetative cover, and an impacted riparian zone added to the sediment load problem.”

The water quality standard applicable for Colaparchee Creek is: *“All waters shall be free from material related to municipal, industrial, or other discharges which produce turbidity, color, odor, or other objectionable conditions which interfere with legitimate water uses.”*

Colaparchee Creek has been determined to have a current sediment load of 2,382 tons a year. The Wasteload Allocation (WLA) assigned by the State to Colaparchee Creek for certain point sources allows for 0 tons of sediment. Colaparchee Creek has an assigned Load Allocation of 1,331 tons/yr, which when added to the WLA of 0 tons/yr, produces an approximate Total Load target of 1,331 tons/yr. As stated above, Colaparchee Creek’s current sediment load has been determined to be 2,382 tons/yr, and therefore it would require a 44.1 percent reduction in sediment load to reach what is considered an acceptable limit for allowable pollutant loading.

The Biota TMDL states that land use percentages of note surrounding Colaparchee Creek include 64.52 percent forest uses, 8.53 percent “Pasture/Hay,” 13.63 percent “Row Crops,” 4.06 percent High Intensity Commercial/Industrial/Transportation,” and 3.87 percent “Transitional.” The committee questioned these figures in relation to what was currently understood to be land uses in the area.

EPD has determined that 0.32 percent of the sediment load originates from forest uses, .43 percent from “Pasture/Hay,” 92.27 percent from “Row Crops,” 0.23 percent from High Intensity Commercial/Industrial/Transportation,” and .17 percent from “Transitional.”

Possible Pollutant Sources...Colaparchee Creek

There were several possible sources contributing to the sediment impairment that were identified by the stakeholders through the three meetings:

Colaparchee Creek: Possible Sources of Sedimentation

- Loosened soil particles from **unpaved roadways** (Sanders Road as a possibility) carried away from the roadway, ditch and road bank by water, wind, or traffic - as well as poor ditch maintenance for those ditches that are found along unpaved and paved roads;
- **Recent Interstate 75 construction;**
- **“Legacy Sediment.”** Over the last century, there has been a dramatic decrease in the amount of land farmed in Georgia. Since 1950, there has been a 57 percent reduction in farmland. With the reduction in farmland, there has also been a decrease in the amount of soil erosion. This suggests that the sedimentation observed in the impaired stream segments may be legacy sediment resulting from past land use practices;
- **In 1994, FEMA hired contractors to clean both sides of Colaparchee Creek** from Lake Wildwood north to Interstate 75 and ignored the 25’ buffer rule – adding to sedimentation problems; and
- **Residential and commercial development** involving disturbed earth and un-maintained silt fencing, particularly at:
 - Old Santa’s Forest on Highway 41 – although committee members pointed out that there were several ponds between this development and the creek.

Regulatory and Voluntary Measures: Existing and Future...Colaparchee Creek

In addition to a host of federal and state laws administered by various agencies, there are a number of important local regulatory and voluntary actions, both existing and proposed, that may help to address the possible sources noted above. They are:

- Monroe County has an adopted soil and erosion control ordinance, where developers of land disturbing activities greater than 1.1 acres must submit a SES plan for review by Monroe County and the NRCS. This will help to address loading sources that may originate from commercial and residential development. Monroe County is responsible for providing enforcement and compliance. Members called for better enforcement of SES laws by the County. Monroe County should specifically name personnel responsible for this measure;
- Bibb County has an adopted soil and erosion control ordinance. All plans are supposed to be reviewed by Soil and Water Conservation District, although Bibb County reviews all plans by deferral where developers of land disturbing activities greater than 1.1 acres must submit a SES plan for review by Bibb County. This will help to address loading sources that may originate from commercial and residential development. Bibb County is responsible for providing enforcement and compliance. Members called for better enforcement of SES laws by the County and Bibb County should specifically name personnel responsible for this measure;

- Monroe and Bibb counties will entertain the possibility of adopting BMPs for unpaved road maintenance in 2004 that may assist with decreasing the amount of sediment load originating from unpaved roads. This may include the utilization of the publication entitled Recommended Practices Manual, A Guideline for Maintenance and Service of Unpaved Roads as a guide in maintaining unpaved roads and roadside ditches. Both Monroe and Bibb counties should specifically name personnel responsible for this measure;
- Monroe County intends to adopt the Part V Environmental Criteria as mandated by the Georgia Growth Planning Act during their next Comprehensive Plan updates in 2005. Bibb County adopted these criteria in 2001. This will establish standards and procedures pertaining to the protection of river corridors, mountaintops, water supply, watersheds/reservoirs, groundwater recharge areas, and wetlands. The stakeholder committee suggested that Monroe County not wait until the comprehensive plans are due to adopt these criteria, and Monroe County should specifically name personnel responsible for this measure;
- Various partners, including Adopt-A-Stream, will participate in public education measures, beginning with the TMDL Implementation Plan and continuing into the future through the use of Best Management Practices;
- The committee suggested that Bibb and Monroe counties review their existing land use ordinances to ensure that they effectively act to limit stormwater velocity and its effects. Both Monroe and Bibb counties should specifically name personnel responsible for this measure;
- The implementation of an Adopt-A-Stream program was also recommended. The program could be utilized by both Bibb and Monroe counties through various organizations and groups throughout the watershed. The program could provide updates on current stream conditions in the future as the requisite funding and support are developed. The Ocmulgee Riverkeeper organization is an excellent grass roots effort that can help this program gain momentum;
- The Georgia Forestry Commission operates a water quality program that includes the development of BMPs, BMP education programs, and BMP monitoring for compliance, including monthly BMP assurance examinations;
- Monroe County has an established Greenspace Program that advises the County on targeting general and specific areas to designate as greenspace, which may include acquisition of easements that can serve as buffers along streams to help dilute runoff. Both Monroe County should specifically name personnel responsible for this measure;
- A cooperative monitoring program would be useful in further discerning the actual sources of sediment load. The Georgia DNR, EPD, Monroe County, and Adopt-A-Stream and possibly local volunteers would conduct the program. It could also seek funding and cooperation for a watershed assessment and develop a program for implementation assessments of Colaparchee Creek;
- Local timber companies/loggers to adopt forestry best management practices; and
- Stronger enforcement of Soil and Erosion/Sedimentation laws by both Bibb and Monroe counties. Both Monroe and Bibb counties should specifically name personnel responsible for this measure;

- Additional and direct education of enforcers of Soil and Erosion Control practices by the State of Georgia
- Periodic inspection of silt fencing at development locations
- Lobby state to eliminate the 1.1 acre development threshold where a SES plan would have to be submitted, and require review on all development.

Schedule for Implementation... Colaparchee Creek

The following will be tentatively initiated and continued past 2003:

- Monroe and Bibb counties will continue to enforce their Soil and Erosion Control Ordinances;
- Various public education measures by organizations and groups throughout the watershed;
- BMPs for the forestry community will continue to be promoted and the Monthly BMP Assurance Examinations are set to begin this year; and
- The Monroe County Greenspace Committee will be apprised of the Revised TMDL plan and may modify their Greenspace goals accordingly.

The following will be tentatively initiated and continued past 2004:

- Monroe and Bibb counties will entertain the adoption of BMPs for unpaved road maintenance in areas in immediate proximity to creek and stream crossings.
- Possible Adopt-A-Stream Program established in either or both counties.

The following will be tentatively initiated and continued past 2005:

- Monroe County will adopt Part V Environmental Criteria as part of its Comprehensive Plan update, although committee members strongly encouraged that these criteria be adopted earlier, if possible.

Monitoring Plan... Colaparchee Creek

Future monitoring for these streams will include the following:

- Department of Natural Resources-Environmental Protection Division – The “Stream Team” is scheduled to conduct more testing in the Ocmulgee River Basin in 2004. There is the potential for the creation of an Adopt-A-Stream, which, along with local government partners, may be able to collect additional data and augment the EPD’s testing efforts.

Criteria to Determine Substantial Progress...Colaparchee Creek

- Adoption by Monroe County of Part V Environmental Ordinances;
- Adoption by Monroe and Bibb counties of BMPs for unpaved road practices in immediate proximity to creek and stream crossings;
- Continued enforcement of SES ordinances by Monroe and Bibb counties;
- Creation of Cooperative Monitoring Program by various partners;
- Creation of Adopt-A-Stream Program by various partners; and
- Decrease in pollutant levels in stream

Funding Sources... Colaparchee Creek

- **Georgia Quality Growth Program:** State of Georgia and Monroe County - Monroe County is applying for a Georgia Department of Community Affairs' Quality Growth Program Grant to review their current land use plan, which may or may not include a review of ordinances.
- **US EPA Section 604(b) funds** - Federal grant funds administered by the Department of Natural Resources for the State of Georgia. Part of these funds allow regional development centers to perform further development of plans to study water quality problems, perform watershed evaluations, conduct strategic monitoring, and characterize pollution sources for 303(d) streams.
- **US EPA Watershed Surveys and Planning Program - Small Watershed Program** – This program provides planning assistance to local agencies for the development of coordinated water and related land resources programs in watersheds and river basins.
- **Georgia Greenspace Program:** State of Georgia and Monroe County - Funding awarded by the Georgia Greenspace Commission can be used to purchase riparian buffers along rivers and streams and wetlands. The preservation of these valuable ecological resources will help ensure they will continue to perform their natural functions related to water quality.

Conclusion... Colaparchee Creek

Additional and more accurate data on actual sources of sediment loads to this stream segment will go far to helping partners to better define and more directly address the problems, although the Committee has identified numerous probable sources of elevated sediment runoff. In the meantime, there are real steps that can be taken by state and local partners to possibly arrest the amount of sediment load going into both streams, if not to outright lower it. These include more regulation/enforcement and proactive measures such as the formation of grassroots organizations, the partnering of those organizations with local government partners, and greenspace planning by local partners. Additional public education can only serve to increase public awareness and lend credibility to the process.

Background....Rocky Creek – Fecal Coliform

The impacted segment of Rocky Creek runs from one mile upstream of Rocky Creek Road to Tobesofkee Creek in Macon. This five mile segment of Rocky Creek is currently on the 303(d) list in the State of Georgia for violating the water quality standard for Fecal Coliform. The water use classification this segment of Rocky Creek is fishing and it is found to be partially supporting this designated use. Georgia EPD calculates that a 93 percent reduction in fecal coliform levels is required to bring Rocky Creek within the applicable water standard.

Land use percentages of note surrounding the Rocky Creek segment include 53.2 percent forest uses, 7.0 percent “High Intensity Commercial/Industrial/Transportation,” 20.90 percent residential uses, and 6.1 percent “Row Crops.”

TMDL Data... Rocky Creek

Georgia EPD tested samples from Rocky Creek from March through October of 1999 to detect the level of fecal coliform at two stations:

- Rocky Creek at Log Cabin Drive
- Rocky Creek at Rocky Creek Road near Macon

For the months of May through October, fecal coliform should not exceed a geometric mean of 200 counts per 100ml on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours. In the months of November through April, fecal coliform should not exceed a geometric mean of 1000 counts per 100ml, based on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours, and not to exceed a maximum of 4,000 counts per 100ml for any sample.

The data gathered indicated four exceedances of the fecal coliform level during the May through October testing, with a geometric mean standard of 360 counts per 100ml during the September/October period. Additionally, there was one exceedance of the fecal coliform level during the March and April testing, although the geometric mean standard of counts per 100ml for the period was within acceptable levels.

Background....Tobesofkee Creek – Fecal Coliform

There are three impacted segments of Tobesofkee Creek totaling eighteen miles, and the segments are found between Cole Creek and Rocky Creek. All three segments are currently on the 303(d) list in the State of Georgia for violating the water quality standard for Fecal Coliform and all are classified as fishing. During these stakeholder meetings, the committee will focus on two segments: the first segment is from Cole Creek to Todd Creek (not supporting its use) and the second segment is from Lake Tobesofkee to Rocky Creek, and found to be partially supporting this designated use. Georgia EPD calculates that an 88 percent reduction in fecal coliform levels is required to bring all three segments within the applicable water standard.

Land use percentages of note surrounding the three segments of Tobesofkee Creek include 69.0 percent forest uses, 3 percent residential uses, 6.3 percent “Row Crops” and 11.4 percent “Pasture/Hay.”

TMDL Data... Tobesofkee Creek

Georgia EPD tested samples from Tobesofkee Creek from January to December of 1999 to detect the level of fecal coliform at the following stations:

Cole Creek to Todd Creek

- Tobesofkee Creek at Parks Road near Forsyth

Lake Tobesofkee to Rocky Creek

- US Highway 41
- US Highway 129

For the months of May through October, fecal coliform should not exceed a geometric mean of 200 counts per 100ml on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours. In the months of November through April, fecal coliform should not exceed a geometric mean of 1000 counts per 100ml, based on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours, and not to exceed a maximum of 4,000 counts per 100ml for any sample.

Cole Creek to Todd Creek

The data gathered indicated five exceedances of the fecal coliform level during the May through October testing, with a geometric mean standard of 1370 counts per 100ml in June/July and 205 in the September/October period. Additionally, there was one exceedance of the fecal coliform level during the November through April testing, although the geometric mean standard of counts per 100ml for the period was within acceptable levels during the period.

Lake Tobesofkee to Rocky Creek

The data gathered indicated six exceedances of the fecal coliform level during the May through October testing, with a geometric mean standard of 454 counts per 100ml in September/October period. There was no exceedance of the fecal coliform level during the November through April testing.

TMDL Data... Fecal Coliform

The presence of fecal coliform bacteria in aquatic environments indicates that the water has been contaminated with the fecal material of man or other animals. At the time this occurred, the source water might have been contaminated by pathogens or disease producing bacteria or viruses, which can also exist in fecal material. Some waterborne pathogenic diseases include typhoid fever, viral and bacterial gastroenteritis and hepatitis A. The presence of fecal contamination is an indicator that a potential health risk exists for individuals exposed to this water. Fecal coliform bacteria may occur in ambient water as a result of the overflow of domestic sewage or non-point sources of human and animal waste.

Non-point sources of fecal coliform bacteria are diffuse sources that cannot be identified as entering a waterbody through a discrete conveyance at a single location. These sources, generally, but not always, involve accumulation of fecal coliform bacteria on land surfaces and washoff as a result of storm events.

Possible Pollutant Sources...Rocky and Tobesofkee creeks

Stakeholders made an effort to identify possible sources that could be responsible for high fecal coliform levels through the three meetings:

Rocky Creek: Possible Pollution Sources

- **Urban runoff**, including pet waste;
- Macon Water Authority **Sewer System**
- **Wildlife** sources, such as feral hogs and deer;
- **Illegal dumping** of deer and other animal carcasses; and
- Indirectly – **loss of buffer/filter property and growth in impervious surfaces.**

Tobesofkee Creek (Cole Creek to Todd Creek): Possible Pollution Sources

- **Failing septic systems** along creek and tributaries;
- **Dairy/Cattle farms** in area;
- **Wildlife** sources, such as feral hogs and deer; and
- **Illegal dumping** of deer and other animal carcasses.

Tobesofkee Creek (Lake Tobesofkee to Rocky Creek): Possible Pollution Sources

- **Failing septic systems** along creek and tributaries;
- Agricultural and **cattle** contributions below Lake;
- **Urban runoff**, including pet waste;
- **Diverse land uses** on both sides of the creek;
- Macon Water Authority **Sewer System**;
- **Wildlife** sources, such as feral hogs and deer; and
- **Illegal dumping** of deer and other animal carcasses.

Regulatory and Voluntary Measures: Tobesofkee and Rocky Creeks

In addition to a host of federal and state laws administered by various agencies, there are a number of important local regulatory and voluntary actions, both existing and proposed, that may help to address the possible sources noted above. They include:

- The Monroe and Bibb County Health Departments will continue to review locations and plans for septic tank installation to ensure state regulations are being met in their respective jurisdictions. On-site inspections of new septic tanks will be continued to ensure proper installation. Bibb County also checks where there is any problem with septic tanks, mandates and specifies repairs, and where public sewer is available – connection is mandated. Follow inspections are provided by the Bibb County. The committee suggested Monroe County institute septic inspections on older systems when change of owners or when tax assessor canvass county. Both Monroe and Bibb counties should specifically name personnel responsible for this measure;

- Bibb County is preparing a new solid waste ordinance that will provide for greater enforcement through an Environmental Enforcement Officer, a new position created in 2003 for the county;
- Monroe County intends to adopt the Part V Environmental Criteria as mandated by the Georgia Growth Planning Act during its next Comprehensive Plan update in 2005. Bibb County adopted these criteria in 2001. This will establish standards and procedures pertaining to the protection of river corridors, mountaintops, water supply, watersheds/reservoirs, groundwater recharge areas, and wetlands. The committee recommended that Monroe County adopt these criteria ahead of the deadline. Monroe County should specifically name personnel responsible for this measure;
- Various partners will participate in public education measures, beginning with the TMDL Implementation Plan;
- The implementation of an Adopt-A-Stream program was also recommended. The program could be utilized through various organizations and groups throughout the watershed. The program could provide updates on current stream conditions in the future as the requisite funding and support are developed;
- The Macon Water Authority is developing the C.M.O.M. (Capacity, Management, Operations, and Maintenance program, where the actual physical state of the system will be assessed and reported to EPA later this year. This effort will also include a stream-monitoring program at sewer line crossings at creeks. There have been funds allocated for additional upgrades of the collection system. The Macon Water Authority should specifically name personnel responsible for this measure;
- The committee recommended that Bibb and Monroe counties, and the cities of Macon, Payne City, and Forsyth, examine existing land use ordinances to determine their effectiveness at limiting the velocity and negative impacts of urban stormwater runoff, as well as to aid to mitigate the increase of impervious services. All local governments should specifically name personnel responsible for this measure ;
- The Cooperative Extension Service might partner with local dairy farmers in following grazing BMPs. The Cooperative Extension Service should specifically name personnel responsible for this measure;
- A cooperative monitoring program would be useful in further discerning the actual sources of runoff. The Georgia DNR, EPD, Bibb County, and Adopt-A-Stream and possibly local volunteers would conduct the program. It could also seek funding and cooperation for a watershed assessment and develop a program for implementation assessments of Tobesofkee and Rocky creeks.
- EPD to use E. Coli as a standard, rather than fecal coliform, which is more indicative of actual human risk;
- Create sewer watch program where trails are walked along sewer lines that are on public property (and not private easements) and MWA notified of potential leaks; and
- Monroe County has an established Greenspace Program that advises the County on targeting general and specific areas to designate as greenspace, which may include acquisition of easements that can serve as buffers along streams to help

dilute runoff. Monroe County should specifically name personnel responsible for this measure

Schedule for Implementation... Tobesofkee and Rocky Creeks

The following will be tentatively initiated and continued past 2003:

- Various public education measures;
- Monroe County Health Department to continue review of septic tank siting and installation;
- Bibb County Health Department to continue review of septic tank siting and installation;
- Bibb County to continue to enforce the Solid Waste Ordinance; and
- Macon Water Authority to continue the CMOM process, and accelerate sewer line rehabilitation.

The following will be tentatively initiated and continued past 2004:

- Possible Adopt-A-Stream Program established by the Ocmulgee Riverkeeper organization in Monroe and Bibb Counties;
- Cooperative Extension Service to reach out to local farmers to introduce grazing/pastureland best management practices; and
- Possible review of Monroe and Bibb county land use ordinances for any potential improvements with respect to fecal coliform issues.

The following will be tentatively initiated and continued past 2005:

- Monroe County will adopt Part V Environmental Criteria as part of their Comprehensive Plan update in 2005. The committee suggested these criteria be adopted as soon as possible; and

Monitoring Plan... Tobesofkee and Rocky Creeks

Further monitoring of the fecal coliform concentrations at the current as well as additional monitoring stations in Tobesofkee and Rocky Creeks is needed to better characterize sources of fecal coliform bacteria and document future reduction of loading. Possible cooperative monitoring program made up of local partners to coordinate with Stream Team to maximize collection of data.

Criteria to Determine Substantial Progress...

Tobesofkee and Rocky Creeks

- Adoption by Monroe County of Part V Environmental Ordinances;
- Enforcement of newly created Bibb County solid waste ordinance; and
- Creation of Adopt-A-Stream Program by various partners; and
- Decreased levels of pollutants in creeks

Funding Sources... Tobesofkee and Rocky Creeks

- **US EPA Section 604(b) funds** - Federal grant funds administered by the Department of Natural Resources for the State of Georgia. Part of these funds allow regional development centers to perform further development of plans to study water quality problems, perform watershed evaluations, conduct strategic monitoring, and characterize pollution sources for 303(d) streams.
- **US EPA Watershed Surveys and Planning Program - Small Watershed Program** – This program provides planning assistance to local agencies for the development of coordinated water and related land resources programs in watersheds and river basins.
- **Georgia Greenspace Program:** State of Georgia and Monroe County - Funding awarded by the Georgia Greenspace Commission can be used to purchase riparian buffers along rivers and streams and wetlands. The preservation of these valuable ecological resources will help ensure they will continue to perform their natural functions related to water quality.

Conclusion... Rocky and Tobesofkee creeks

As the Rocky Creek segment and one Tobesofkee Creek segment is relatively near urban areas, stakeholders suspected urban runoff as being a potential source for higher fecal coliform readings. This is quite probable with higher densities of development than some of the more rural areas, although difficult to confirm. The Macon Water Authority (MWA) readily admits and reports spills and leaking sewer pipes, which can add to higher fecal levels. However, MWA officials do not feel that the amount of their contributions are solely responsible for the total fecal load reported downstream. For their part, MWA is undertaking a comprehensive efficiency study that will seek to minimize overflows into area streams. Stakeholders suspected that failing septic systems along affected streams were also contributing to the high readings. There are a variety of other possible sources that are possibly contributing to higher fecal readings as well, including wildlife, agricultural operations, and leaking septic systems.

Stakeholders also questioned the use of single monitoring stations for the collection of fecal coliform data for Rocky and Tobesofkee creeks, citing that additional stations and data may better reflect actual conditions throughout both stream segments and more readily help identify the actual issues.

Local officials are concerned about the relative health of Rocky and Tobesofkee creeks and are willing to commit local resources towards additional testing and public education.

STATE OF GEORGIA TMDL IMPLEMENTATION PLAN WATERSHED APPROACH Ocmulgee River Basin

Local Watershed Governments

Middle Georgia RDC
Lamar County
Monroe County
Bibb County
City of Barnesville
City of Forsyth
City of Payne City
City of Macon

TMDL Implementation Plans are platforms for establishing a course of actions to restore the quality of impaired water bodies in a watershed. They are intended as a continuing process that may be revised as new conditions and information warrant. Procedures will be developed to track and evaluate the implementation of the management practices and activities identified in the plans. Once restored, appropriate management practices and activities will be continued to maintain the water bodies. **With input from appropriate stakeholder groups, a TMDL Implementation Plan has been developed for a cluster of impaired streams and the corresponding pollutants.** The impaired streams are located in the same sub-basin identified by a HUC10 code (Figure 1).

This Implementation Plan addresses an action plan, education/outreach activities, stakeholders, pollutant sources, and potential funding sources affecting the sub-basin. In addition, the Plan describes (a) regulatory and voluntary practices/control actions (*management measures*) to reduce target pollutants, (b) milestone schedules to show the development of the management measures (*measurable milestones*), (c) a monitoring plan to determine the efficiency of the management measures and measurable milestones, and (d) criteria to determine whether substantial progress is being made towards reducing pollutants in impaired waterbodies. The overall goal of the Plan is to define a set of actions that will help achieve water quality standards in the state of Georgia. Following this section is information regarding individual segments.

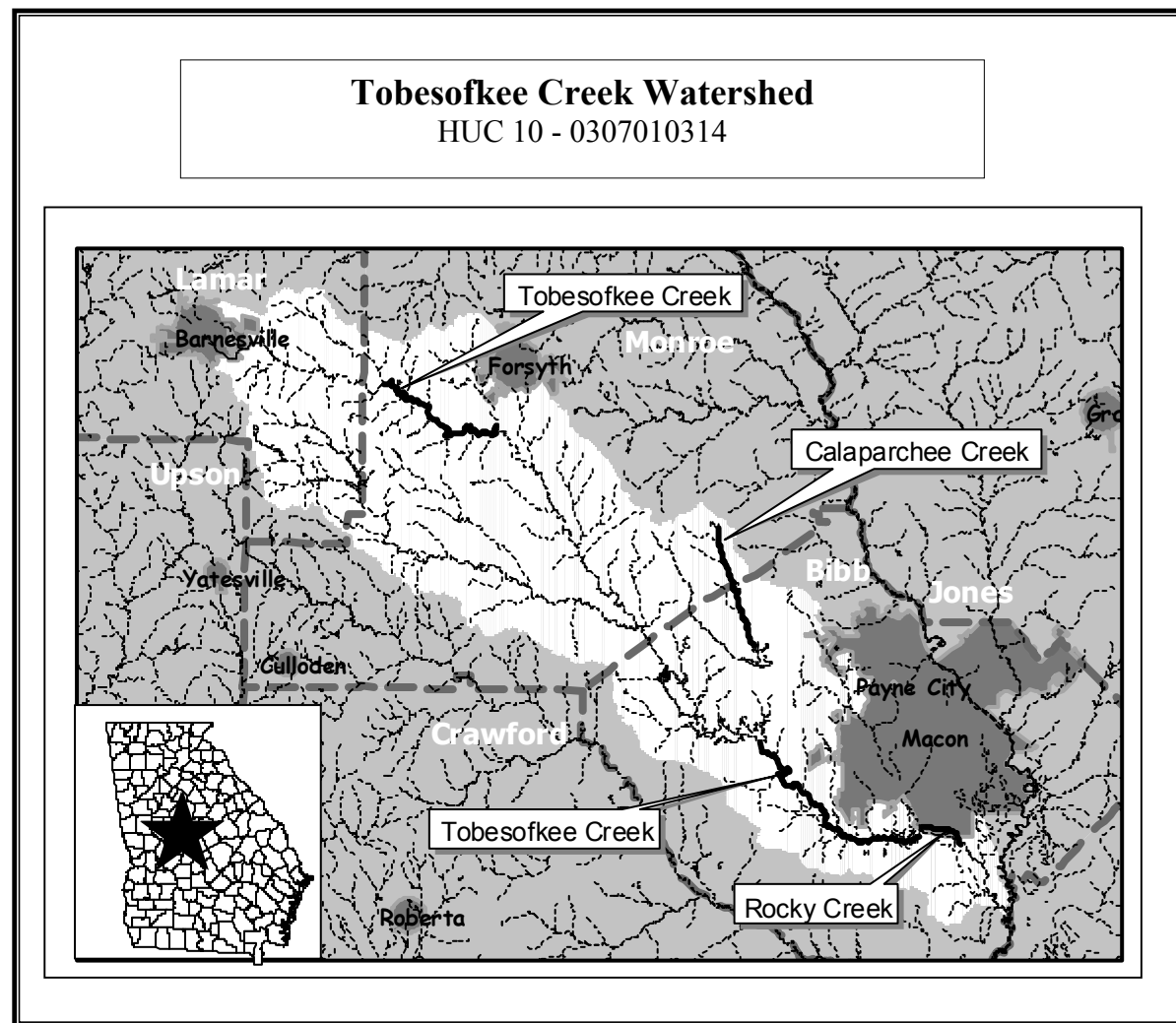


FIGURE 1

Impaired Waterbody*	Impaired Stream Location	Impairment
1. Colaparchee Creek	Upstream Lake Wildwood	Bio (Sediment)
2. Rocky Creek	1 mi. upstream Rocky Creek Rd. to Tobesofkee Creek	Fecal Coliform
3. Tobesofkee Creek	Lake Tobesofkee to Rocky Creek	Fecal Coliform
4. Tobesofkee Creek	Cole Creek to Todd Creek	Fecal Coiform

*These Waterbody Numbers are referenced throughout the Implementation Plan.

Action Plan for Tobesofkee Creek Watershed

Tobesofkee Creek Watershed
HUC 10 - 0307010314

POLLUTANT:	SOURCE:	EFFECT:	WHAT CAN I DO?	
			At Home: Community, School	At Work: Business, Government
<input type="checkbox"/> Dissolved Oxygen (DO) <input checked="" type="checkbox"/> Fecal Coliform (FC) <input checked="" type="checkbox"/> Sediment <input type="checkbox"/> Metals <input type="checkbox"/> Fish Consumption Guidelines (FCG) <input type="checkbox"/> Other (Please List)	<input checked="" type="checkbox"/> Industrial <input checked="" type="checkbox"/> Urban <input checked="" type="checkbox"/> Agriculture <input type="checkbox"/> Forestry <input type="checkbox"/> Residential <input checked="" type="checkbox"/> Other (Please List) Runoff Wildlife Dirt Rds. Legacy Sed.	<input checked="" type="checkbox"/> Habitat <input type="checkbox"/> Recreation <input type="checkbox"/> Drinking Water <input type="checkbox"/> Aesthetics <input type="checkbox"/> Other (Please List)	<ul style="list-style-type: none"> Regular Maintenance of Septic Tanks Start or participate in an Adopt-A-Stream program Keep eyes open for sources of sediment runoff – e.g. poor soil erosion prevention practices in nearby development Learning more about erosion/sedimentation Cease mowing stream buffers Keep eyes open that existing riparian buffers are left undisturbed 	<ul style="list-style-type: none"> If involved in agriculture, follow related BMPs If involved in contracting/development, follow local Soil and Erosion Sedimentation laws If involved with unpaved road maintenance, adopting relevant BMPs If involved in forestry, follow forestry BMPs

INFORMATION/EDUCATION/OUTREACH ACTIVITIES

An education/outreach component will be used to enhance public understanding of and participation in implementing the TMDL Implementation Plan. List of all previous and planned information/education/outreach activities.

Responsible Organization Or Entity	Description	Impacted Waterbodies*	Target Audience	Anticipated Dates (MM/YY)
Advisory Committee	Public information about all watershed creeks	All Creeks	County & Region residents	07/03
Ocmulgee RiverKeeper	Through local events and festivals by Ocmulgee Riverkeeper & Macon/Bibb Clean and Beautiful	All Creeks	County & Region residents	12/03
Macon Water Authority	Macon Water Authority press releases and school curricula as part of "CMOM" effort, and newsletter outreach.	Rocky & Tobesofkee creeks	County & City residents	06/04
Dept. of Community Affairs	Public education on DCA Ocmulgee River Assessment	All Creeks	County & Region residents	01/04
Ocmulgee RiverKeeper	Establish Adopt-A-Stream programs in Bibb & Jones counties	All Creeks	County & Region residents	12/05
Local Partners	Press Releases and Presentations to different relevant groups	All Creeks	Homeowners/builders	12/03 -
Georgia DNR	Distribute information on unpaved road BMPs to local counties	Colaparchee	County managers and staff	07/03 -

STAKEHOLDERS

EPD encourages public involvement and the active participation of stakeholders in the process of improving water quality. Stakeholders can provide valuable information and data regarding their community and the impaired water bodies and can provide insight and/or implement management measures.

List of local governments, agricultural organizations or significant landholders, commercial forestry organizations, businesses and industries, and local organizations including environmental groups and individuals with a major interest in this watershed.

Name/Organization	Address	City	State	Zip	Phone	E-Mail
David Bennett, Deputy Exec. Director GA Soil & Water Conservation Comm.	P. O. Box 8024	Athens	GA	30603		
Dennis Brooks NRCS, USDA Service Center	205 East Jeffersonville	Madison	GA	30650	(706) 342-1315	
Ben Brown, Supervisor Piedmont Soil & Water Conservation Dis.	3014 Heritage Road, Suite 1	Milledgeville	GA	31061		
Harriet Bryant Water Resources Branch-Georgia EPD	4220 International Pkwy., Suite 101	Atlanta	GA	30354	(404) 675-1670	Harriet_Bryant@ mail.dnr.state.ga.us
Grady Calvert, Supervisor Piedmont Soil & Water Conservation Dis.	3014 Heritage Road, Suite 1	Milledgeville	GA	31061		
Ralph Crumley, Supervisor Piedmont Soil & Water Conservation Dis.	3014 Heritage Road, Suite 1	Milledgeville	GA	31061		
Joe Duckworth Cattlemen's Association	299 Barrows Ferry Road	Milledgeville	GA	31061		
Brent Dykes Ga. Soil & Water Conservation Comm.	3014 Heritage Road, Suite 1	Milledgeville	GA	31061	(478) 445-5766	bdykes@gaswcc.org
Mike Giles Georgia Poultry Federation	P. O. Box 763	Gainesville	GA	30503	(770) 532-0473	mike@gapf.org
John Grimes, Supervisor Piedmont Soil & Water Conservation Dis.	3014 Heritage Road, Suite 1	Milledgeville	GA	31061		
Nathan Klaus Georgia DNR - Nongame Wildlife	116 Rum Creek Drive	Forsyth	GA	31029	(478) 994-1438	naklaus@mindspring.com
Drew Marczak The Timber Company	P. O. Box 1069	Watkinsville	GA	30677		
Abit Massey, President Georgia Poultry Federation	Box 763	Gainesville	GA	30503		

Bill Meaks Poultry Science Department	University of Georgia	Athens	GA	30602	(706) 542-9182	bmeaks@UGA.edu
William J. Moore	355 Monticello Highway	Gray	GA	31032		
Don Morse, Program Dev. Coord. UGA Cooperative Extension Service	1109 Experiment Street Flynt Building, Room 227	Griffin	GA	30223-1797		
David Pitts, Supervisor Piedmont Soil & Water Conservation Dis.	3014 Heritage Road, Suite 1	Milledgeville	GA	31061		
Mark Risse, Extension Engineer UGA Cooperative Extension Service	Driftmier Engineer Building The University of Georgia	Athens	GA	30602		
William Segars, Water Quality Eng. College of Agriculture/Envir. Sciences	University of Georgia Plant Sciences Building	Athens	GA	30602		
Ronnie Shell, Refuge Manager Piedmont National Wildlife Refuge	718 Juliette Road	Round Oak	GA	31038	(478) 986-5441	piedmont@fws.gov
Robert Shulstead, Asst. Dean & Coord. College of Agriculture/Envir. Sciences	University of Georgia Conner Hall	Athens	GA	30602		
Wayne Tankersley, District Agent UGA Cooperative Extension Service	1109 Experiment Street Flynt Building, Room 227	Griffin	GA	30223-1797		
Mike Tanner, Chief Ranger Georgia Forestry Commission	2692 Highway 441 S.	Milledgeville	GA	31061		
David Thompson Cagles, Inc.	P. O. Box 570	Forsyth	GA	31029	(478) 994-5156	CagleFarmInc.@aol.com
Joe Thornton	676 North Cross Road	Gray	GA	31032		
Larry Walker Larry.Walker@Weyerhaeuser.com Weyerhaeuser Company	P. O. Box 238	Oglethorpe	GA	31068	(478) 472-5269	
Elizabeth Watts	50 Mays Street	Forsyth	GA	31029	(478) 994-6688	
Harold West Georgia Forestry Commission	119 Highway 49	Milledgeville	GA	31061	(478) 445-5164	hwest@gfc.state.ga.us
Tiffany Wharton Environmental Code Enforcement	P. O. Box 1359	Gray	GA	31032	(478) 986-6084	jcclan@mylink.net
Wayne Williams, President Georgia Cattlemen's Association	1473 Hunting Club Road	Crawfordville	GA	30631		
John Wilson Ocmulgee Riverkeeper	2340 Clayton Street	Macon	GA	31204		

Tom Wooten, Chief Ranger Georgia Forestry Commission	302 Milledgeville Road	Eatonton	GA	31024	
Richard Buford	3795 Bonita Place	Macon	GA	31204-1309	
Bobby Burnett Lamar County Board of Commissioners	326 Thomaston Street Box 15	Barnesville	GA	30204	(770) 358-0181
Remer C. Daniel	6875 Colaparchee Road	Macon	GA	31210-7222	
J. Doug Dunwoody	P. O. Box 5125	Macon	GA	31208	
Virginia Gilbert	920 Irving Drive	Macon	GA	31201	
Harold B. Harrison	6964 Colaparchee Road	Macon	GA	31210	
Mary S. Logan	265 Sanders Road	Macon	GA	31210	
Ann C. Long	105 Loraine Woods Court	Macon	GA	31210	
Debra Massey	2935 Masseyville Road	Macon	GA	31217	
Jimmy Matthew City of Barnesville	109 Forsyth Street	Barnesville	GA	30204	
Berkley Napier Minor	5560 Whitner Way	Atlanta	GA	30327	
Elmer L. Raburn	214 Loraine Forest Drive	Macon	GA	31210	
Kenneth Roberts Barnesville City Manager	109 Forsyth Street	Barnesville	GA	30204	
Josephine Rollins	1267 Briarcliff Road	Macon	GA	31211-1705	
James A. Smith	P. O. Box 88	Macon	GA	31202-88	
Patty Stephens Lamar County Administrator	326 Thomaston Street Box 15	Barnesville	GA	30204	(770) 358-5146
Jerry L. Stevens	P. O. Box 125	Bolingbroke	GA	31004	
Benita S. Veal	845 Inverness Avenue	Macon	GA	31204	
Tom Wirsing Hephzibah Children's Home	6601 Zebulon Road	Macon	GA	31220-7606	
Tabernacle Baptist Church	914 Second Street	Macon	GA	31201	
Matthew W. Dorsey	4860 Brittany Drive	Macon	GA	31210	
N. A. Hardin	P. O. Box 390	Forsyth	GA	31029-390	
Robert J. Hargrove	1223 Adams Street	Macon	GA	31201	

Ken Smith	1172 Hightower Road	Macon	GA	31206		
B. Sanders Walker, Jr.	P. O. Box 4248	Macon	GA	31208-4248		
Armstrong World Industries	4520 Broadway	Macon	GA	31206		
Tony Rojas, Director Macon Water Authority	P. O. Box 108	Macon	GA	31202-0108		
Karis Dykes	5216 Brandywine Drive	Macon	GA	31210-2902		
Gledhill Dell Family	5225 Columbus Drive	Macon	GA	31206		
James Garrett	5809 Columbus Road	Lizella	GA	31052		
Benjamin W. Griffith, III	6304 Peake Road	Macon	GA	31210		
Jim Ham	P. O. Box 255	Smarr	GA	31086	(478) 994-0589	javham@aol.com
Paul H. Jossey, Jr. City of Forsyth	P. O. Box 1447	Forsyth	GA	31029		
Deron King Forsyth Administrator	P. O. Box 1447	Forsyth	GA	31029		
Gail King Monroe County Clerk	P. O. Box 189	Forsyth	GA	31029		
Dana Lynch, Agent Monroe Co. Cooperative Extension Service	90 Martin Luther King Drive	Forsyth	GA	31029		
Ernest McAllister	1335 Parks Road	Forsyth	GA	31029		
Kay Mooney Weyerhaeuser Company	P. O. Box 238	Oglethorpe	GA	31068		
Jim Peters Monroe County Commissioner	475 Blue Ridge School Road	Forsyth	GA	31029	(478) 994-9689	jmpl@mindspring.com
Bud Queen	13871 Boxankle Road	Forsyth	GA	31029	(478) 992-9063	
Jason Shirey City of Barnesville	109 Forsyth Street	Barnesville	GA	30204	(770) 358-0314	
Kip Smith Forest Resources Mgmt., Inc.	P.O. Box 1204	Forsyth	GA	31029	(478) 994-1905	
Leon Smith	977 Edge Road	Forsyth	GA	31029	(478) 994-5834	
J. Benjamin Spear, Jr.	543 Spear Road	Forsyth	GA	31029	(478) 994-5442	
Michael Stone, Editor Monroe County Reporter	P.O. Box 795	Forsyth	GA	31029		

Bobby Underwood, Agency Manager Monroe County Farm Bureau	433 North Frontage Road	Forsyth	GA	31029	
Anne Venable	P. O. Box 355	Lizella	GA	31052-355	
Reggie Watson City of Barnesville	109 Forsyth Street	Barnesville	GA	30204	(770) 358-3431
Robert S. Webb	5926 Columbus Road	Macon	GA	31206-5243	
Newton Timber Company, LTD	P. O. Box 5938	Forsyth	GA	31029	
Hardin & Newton & Wright	P. O. Box 390	Forsyth	GA	31029	
A. L. & T. B. Vaughn Estate	P. O. Box 31	Forsyth	GA	31029	
1st Evangelical Church	3601 Fulton Mill Road	Macon	GA	31206-5119	
Jane Bledsoe	2432 Marshallville Road	Perry	GA	31069	
Charles Brooks Bibb County Engineers Office	780 Third Street	Macon	GA	31210	cbrooks@co.bibb.ga.us
Heather Duncan Macon Telegraph	P. O. Box 4167	Macon	GA	31208	(478) 744-4225 hduncan@macontel.com
Robby Gibbs Private Citizen	3651 Christopher Drive	Macon	GA	31216	robbyg@mylink.net
Susan Hanberry Private Citizen	4831 Guerry Drive	Macon	GA	31210	(478) 474-4437 shanberry@stratford.org
Wayne HillSr.	128 Oakview Club Drive	Macon	GA	31216-4109	
Jimmy Jordan	P. O. Box 597	Montezuma	GA	31063	
Lee Martin Private Citizen	1395 Georgia Avenue	Macon	GA	31201	(478) 750-7665
Mike Moon Lowe-Moon Forest Products	P. O. Box 650	Buena Vista	GA	31803	
Tommy Olmstead Bibb County Commission	P. O. Box 4708	Macon	GA	31208-4708	
Ken Sheets Bibb County Interim Engineer	780 Third Street	Macon	GA	31201-3282	
Kenneth Thompson City of Payne City	112 Green Street	Payne City	GA	31204	(478) 743-4904
Melvin Waldrop	P. O. Box 247	Macon	GA	31202	

Chief Administrative Officer

Dexter White
Public Works Department

P. O. Box 247

Macon

GA 31202

Mark Wyzalek
Macon Water Authority

P. O. Box 108

Macon

GA 31202-0108

Oakview, Inc.

P. O. Box 1111

Byron

GA 31008

WATER BODIES/STREAMS COVERED IN THIS PLAN:

These impaired streams are located in the same sub-basin identified by a HUC10 code. Most of the information contained in this section comes from the 303(d) list and has been completed by employees of the EPD Water Protection Branch. Data that placed stream on 303(d) list will be provided upon request.

Waterbody Name #1	Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Colaparchee Creek	Upstream Lake Wildwood	13	Fishing	PS
Primary County	Secondary County	Second RDC	Source (Point/ Nonpoint)	
Monroe	Bibb		Nonpoint	
Pollutants	Water Quality Standards	Required Reduction	TMDL ID	Date TMDL Established
Bio(sediment)	NA	44.1%		January 2002

Waterbody Name #3	Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Rocky Creek	1 mi. upstream Rocky Creek Rd. to Tobesofkee Creek	5	Fishing	PS
Primary County	Secondary County	Second RDC	Source (Point/ Nonpoint)	
Bibb			Nonpoint	
Pollutants	Water Quality Standards	Required Reduction	TMDL ID	Date TMDL Established
Fecal Coliform	100/100 ml (geometric mean Nov. – April) 200/100 ml (geometric mean May – Oct.)	93%		February 2002

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Waterbody Name #3	Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Tobesofkee Creek	Lake Tobesofkee to Rocky Creek	10	Fishing	PS
Primary County	Secondary County	Second RDC	Source (Point/ Nonpoint)	
Bibb			Nonpoint	
Pollutants	Water Quality Standards	Required Reduction	TMDL ID	Date TMDL Established
Fecal Coliform	100/100 ml (geometric mean Nov. – April)	88 %		February 2002
	200/100 ml (geometric mean May – Oct.)			

Waterbody Name #3	Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Tobesofkee Creek	Cole Creek to Todd Creek	8	Fishing	NS
Primary County	Secondary County	Second RDC	Source (Point/ Nonpoint)	
Monroe	Monroe		Nonpoint	
Pollutants	Water Quality Standards	Required Reduction	TMDL ID	Date TMDL Established
Fecal Coliform	100/100 ml (geometric mean Nov. – April)	88 %		February 2002
	200/100 ml (geometric mean May – Oct.)			

POLLUTANT SOURCES

It is important to recognize the potential source(s) causing water quality impairment. Each source must be controlled to comply with target TMDL/Load Allocations for each pollutant. Included is a description of how the sources contribute to the impairment and the waterbody that is impaired.

List of major nonpoint source categories and sub-categories or individual sources (Urban Runoff, Agriculture, Forestry, Municipal Sewage Treatment Plant)

Pollutant	Sources of Pollutants	Description of Contribution To Impairment	Impacted Waterbodies*
Fecal Coliform	Wildlife	Deposits feces onto land surfaces where it can be transported during storm events to nearby streams, illegal dumping of animal viscera.	Rocky and Tobesofkee creeks
Fecal Coliform	Failing Septic Systems	Houses in Bibb and Monroe counties, above and within the identified stream segments, could have failing septic systems	Rocky and Tobesofkee creeks
Fecal Coliform	Sanitary Sewer System Overflows	The Macon Water Authority (MWA) contributes to fecal loading from system overflows and leaks.	Rocky and Tobesofkee creeks
Fecal Coliform	Urban Runoff	Urban Runoff from the cities of Macon and Payne City, including pet waste.	Rocky and Tobesofkee creeks
Fecal Coliform	Dairy/Cattle Operations	Runoff from dairy and cattle operations in watershed contributing to stream impairment	Rocky and Tobesofkee creeks
(Bio) Sediment	FEMA Stream Repair in 1994	Directly after flood of 1994, FEMA contracted to have both sides of stream cleared from Lake Wildwood to Interstate 75.	Colaparchee Creek
(Bio) Sediment	Recent Interstate 75 construction	Neglected silt fence and related structures allow unchecked sediment to leave disturbed areas after a storm event	Colaparchee Creek
(Bio) Sediment	Unpaved Roads	Loosened soil particles from unpaved roadways carried away from the roadway, ditch, and road bank by water, wind, or traffic	Colaparchee Creek
(Bio) Sediment	Commercial and Residential Development	Neglected silt fence and related structures allow unchecked sediment to leave disturbed areas after a storm event	Colaparchee Creek
(Bio) Sediment	Legacy Sediment	Velocity of runoff possibly disturbing latent legacy sediment.	Colaparchee Creek

MANAGEMENT MEASURES, MEASURABLE MILESTONES AND SCHEDULE

(i.e. Local codes and ordinances, Erosion and Sedimentation Control, Storm Water Management, Local water resource monitoring)

The following table lists management measures that have been or will be implemented to achieve water quality standards and the load reductions established in the TMDL. The management measures, including regulatory or voluntary actions or other controls by governments or individuals, specifically apply to the pollutant and the waterbody for which the TMDL was written. A description is provided of how these management measures are/will be accomplished through reliable and effective delivery mechanisms, and how these management measures are/will help achieve the target TMDL. Included is the source of the pollutant, anticipated/past effectiveness of the management measure (very effective, somewhat effective, not effective), the current status (i.e. enforced, in-progress, planning), and measurable milestones and schedule. Milestones are used to measure progress in attaining water quality standards and to determine whether management measures are being implemented.

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Georgia Water Quality Act (OCGA 12-5-20)	Georgia DNR/EPD	Makes it unlawful to discharge excessive pollutants (sediments, nutrients, pesticides, animal waste, etc) into waters of the State in amounts harmful to public health, safety, or welfare, or to animals, birds, or aquatic life or the physical destruction of stream habitats.	1964	In progress	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Point and Non-Point Sources (FC),	Colaparchee, Rocky, and Tobesofkee Creeks	
Bio (Sediment)	Commercial and Residential Development (Sediment)		

Measurable Milestones	Schedule		Comments
	Start	End	
Georgia EPD responsible for enforcement and compliance, for listed sources.	On-going		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Georgia Growth Planning Act (OCGA 12-2-8) Part V Environmental Criteria	Georgia DNR, DCA, MGRDC, and local units of government	Authorized Georgia DNR to develop minimum planning standards and procedures that local jurisdictions could adopt and enforce pertaining to the protection of river corridors, mountain tops, water supply, watersheds/reservoirs, groundwater recharge areas, and wetlands. Silvicultural activities may be exempted from permitting requirements provided the activity complies with BMPs.	2005 (Part of Unified Planning Work Program)	Proposed	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio (Sediment) & Fecal Coliform	Commercial and Residential development	Colaparchee, Rocky, and Tobesofkee Creeks	

Measurable Milestones	Schedule		Comments
	Start	End	

Monroe County to adopt Part V Criteria at next Comprehensive Plan update 2005
 Bibb County adopted Part V Criteria in 2001.

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Soil/Sedimentation Control Ordinance	Bibb and Monroe counties	Developers of land disturbing activities greater than 1.1 acres must submit a SES plan for review by each county and the NRCS.	N/A	In-progress	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio (Sediment)	Commercial & Residential development	Colaparchee, Rocky, and Tobesofkee Creeks	

Measurable Milestones	Schedule		Comments
	Start	End	
Bibb and Monroe counties review submitted plans and check for compliance, then forwards on to the NRCS for further review. Each county is responsible for providing enforcement and compliance with local ordinance.	On going		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Georgia Agricultural Best Management Practices	Agribusinesses and farms	Cattle, swine, chicken and other agricultural businesses follow best management practices to ensure the preservation of clean water. These management practices include measure such as protection of riparian buffers and wetland preservation.		Proposed	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform Sediment (Biota)	Fecal matter from farm animals	Colaparchee, Rocky, and Tobesofkee Creeks	

Measurable Milestones	Schedule		Comments
	Start	End	
Cooperative Extension Service to reach out and inform local farmers of grazing BMPS	12/03		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Unpaved Road Maintenance BMPs	Monroe and Bibb counties	Monroe and Bibb counties to consider adoption of BMPs regarding unpaved road maintenance in immediate proximity of stream crossings	2004	Proposed	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio (Sediment)	Unpaved roads	Colaparchee Creek	

Measurable Milestones	Schedule		Comments
	Start	End	
Counties to consider implementation of BMPs as part of normal operating procedures	2004	-	

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Greenspace Program	Monroe County	Establish committee to advise county on targeting general and specific areas to designate as greenspace.	2005	On-going	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio, habitat, sediment, nutrients	Commercial and Residential development	Colaparchee, Rocky, and Tobesofkee creeks	

Measurable Milestones	Schedule		Comments
	Start	End	
Committee to develop implementation plan and advise County on future purchases of suitable Greenspace property/easements.	2005		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Clean Water Act/Section 404	EPA/ Army Corps of Engineers	Requires permit to dredge and fill activities in lakes, rivers, and perennial and intermittent streams, wetlands, sloughs, and natural ponds. Requires normal forestry practices to adhere to BMPs and 15 baseline provisions for forest road construction and maintenance and agriculture in order to qualify for the silvaculture exemption from the permitting process.	1972, 1986, 1988	In-progress	Regulatory
Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness		
Bio (Sediment)	Unpaved Roads	Colaparchee Creek			
Measurable Milestones		Schedule		Comments	
		Start	End		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory/ Voluntary
Septic Tank Installation & Review	Monroe and Bibb County Health Departments	Reviews location and plans for new septic tank installation to ensure state regulations are met. On-site inspection of new septic tanks to ensure proper installation.	N/A	In progress	Regulatory
Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness		
Fecal Coliform	Leaking or sub-standard septic systems	Rocky and Tobesofkee creeks			
Measurable Milestones		Schedule		Comments	
		Start	End		
Plans and recommendations are reviewed on a case-by-case basis. Unresolved complaints are forwarded on to Ga. EPD for enforcement. Bibb County mandates and specifies repairs to faulty systems, and where public sewer is available, connection is available.		On-going			

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Capacity, Management, Operations, & Maintenance Program (CMOM)	Macon Water Authority	Comprehensive Assessment of sanitary sewer system	2002	Underway	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Sanitary System Overflows and Leaks	Rocky and Tobesofkee creeks	

Measurable Milestones	Schedule		Comments
	Start	End	
Conclusion of assessment and submittal to EPD	2003		
Repair and maintenance of existing infrastructure	On-going		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Bibb County Solid Waste Ordinance	Bibb County	Similar to Georgia Water Quality Act, this local ordinance outlaws dumping in the County, with particular respect to streams and waterways	2000	Underway	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Animal viscera dumped in stream	Rocky and Tobesofkee creeks	

Measurable Milestones	Schedule		Comments
	Start	End	
Bibb County to enforce ordinance	On-going		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Review and amending of existing land use ordinances	Monroe and Bibb counties, & cities of Macon, Payne City, and Forsyth	Review of existing land use ordinances to assess relative effectiveness of ordinances at limiting the velocity and negative impacts of urban stormwater runoff.	2004	Proposed	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Urban runoff	Rocky and Tobesofkee creeks	

Measurable Milestones	Schedule	Comments
Monroe County to review ordinances	2004	
Bibb County to review ordinances	2004	
City of Macon to review ordinances	2004	
Payne City to review ordinances	2004	
City of Forsyth to review ordinances	2004	

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Georgia Erosion and Sedimentation Act	Georgia DNR/EPD State Soil and Water Conservation Commission	Requires permits and plans for land-disturbing activities, plans to allow for control and treatment of any source of sediments and adequate sedimentation control facilities to retain sediment to preclude sedimentation of adjacent waters.	1975	In progress	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio (Sediment)	Commercial and Residential Development, and Mining (Sediment)	Colaparchee Creek	

Measurable Milestones	Start	Schedule End	Comments
Legislation calls for the adoption of local procedures governing land-disturbing activities. DNR can adopt procedures if absent locally.	On-going		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Creation of an Adopt A Stream Program	Ocmulgee Riverkeeper, Bibb and Monroe counties	Creation of grassroots volunteer organization that will assist in further public awareness and collecting additional stream data	2004	Not yet initiated	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio (Sediment) & Fecal Coliform	Various	Colaparchee, Rocky and Tobesofkee creeks	
Measurable Milestones		Schedule	Comments
Formation of separate AAS groups		2004	
Public Awareness and data collection program started			

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Cooperative Monitoring Program	AAS, Ocmulgee Riverkeeper, local governments	Additional sampling can be performed to better determine the actual sources	2004	Not yet initiated	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Various	Colaparchee Creek	
Measurable Milestones		Schedule	Comments
Actual sampling performed		2004	

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Creation of Sewer Watch Program	AAS, Ocmulgee Riverkeeper, and local governments	Creation of grassroots volunteer program whereby sewer easements on publicly owned property (and not private easements) are walked and checked periodically for any problems	2004	Not yet initiated	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Sewer System	Rocky and Tobesofkee Creeks	

Measurable Milestones	Schedule		Comments
	Start	End	
Creation of group	2004		
Walks begun and reports compiled	2004		

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status	Regulatory/Voluntary
Georgia's Forestry Best Management Practices	Georgia Forestry Commission (matters involving enforcement are generally referred to Ga EPD)	Inform landowners, foresters, timber buyers, loggers, site preparation and reforestation contractors and others involved with silvicultural operations about commonsense, economical effective practices to minimize non-point sources and thermal pollution.	1989, 1997	In-progress	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Bio (Sediment)	Silviculture	Colaparchee Creek	

Measurable Milestones	Schedule		Comments
	Start	End	

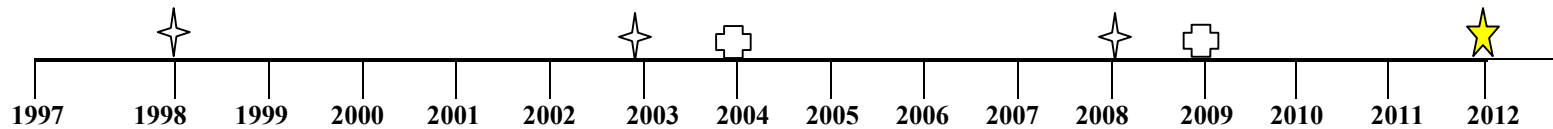
Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/Projected Date	Status
Georgia Forestry Commission Monthly BMP Assurance Examination	Georgia Forestry Commission (matters involving enforcement are generally referred to Ga EPD)	In an effort to document "reasonable assurance" that water quality will be proactively protected during regular ongoing silvicultural operations, the GFC will offer a monthly BMP assurance examination of active sites. All active or ongoing sites will be identified either through monthly air patrol flights, courthouse records, riding the roads, or notification of landowners. Sites located within watersheds of specific biota (sediment) impaired streams will be given a higher priority to identify and conduct examinations.	01/01/03	Proposed

POTENTIAL FUNDING SOURCES The identification and discussion of dedicated funding is important in determining the economic feasibility of the above-mentioned management measures.

Funding Source	Responsible Authority	Status	Anticipated Funding Amount	Impacted Waterbodies*
Georgia Greenspace Program	Georgia Dept. of Natural Resources	Proposed	\$?	Colaparchee and Tobesofkee creeks
Georgia Quality Growth Program	Georgia Dept. of Community Affairs	Proposed	\$25,000	Colaparchee and Tobesofkee creeks
US EPA Section 604(b) grant funds	Georgia DNR/Middle Georgia RDC	Proposed	\$5,000	Uncertain
US EPA Watershed Surveys and Planning Program	US Environmental Protection Agency	Proposed	??	All creeks

PROJECTED ATTAINMENT DATE

The projected date to attain and maintain water quality standards in this watershed is 10 years from acceptance of the TMDL Implementation Plan by EPD.



EPD Monitoring 
 Evaluate TMDL & Attainment Date 
 Project Attainment 

MONITORING PLAN

The purpose of this monitoring plan is to determine the effectiveness of the target TMDL and the management measures being implemented to meet water quality standards. List of previous, current or planned/proposed sampling activities or other surveys. (Monitoring data that placed stream on 303(d) list will be provided if requested.)

Name Of Regulation / Ordinance Or Management Measure	Organization	Impacted Waterbodies*	Pollutants	Purpose/Description	Time Frame		Status (Previous, Current, Proposed)
					Start	End	
Additional Sampling	AAS, Ocmulgee Riverkeeper, local governments	Rocky and Tobesofkee creeks	Fecal Coliform	Cooperative monitoring program could be created to better assess and identify sources, especially in conjunction with the Stream Team's efforts	2004	2004	Proposed
Additional Sampling	EPD "Stream Team"	Ocmulgee River Basin	Fecal Coliform, Sediment	Stream Team will return to Ocmulgee Basin to perform additional testing	2004	2004	Proposed

CRITERIA TO DETERMINE WHETHER SUBSTANTIAL PROGRESS IS BEING MADE

The following set of criteria will be used to determine whether any substantial progress is being made towards reducing pollutants in impaired waterbodies and attaining water quality standards. Discussion on each criteria is recorded in the space provided. Additional relevant criteria are presented in comments.

Percent of concentration or load change (monitoring program) _____

If monitoring results show that it is unlikely that the TMDL will be adequate to meet water quality standards, revision of the TMDL may be necessary.

- Categorical change in classification of the stream (delisting the stream is the goal) _____

- Regulatory controls or activities installed (ordinances, laws) Monroe County will be adopting the Georgia Growth Planning Act Part. V Environmental Ordinances in 2005 may add more "teeth" to existing ordinances and laws. Bibb County adopted this in 2001. Continued enforcement of SES, Solid Waste, and Septic Tank ordinances by both Bibb and Monroe counties.

- Best management practices installed (agricultural, forestry, urban) Monroe and Bibb counties will consider the adoption of the *Recommended Practices Manual: A Guideline for Maintenance and Service of Unpaved Roads* in the immediate vicinity of creek crossings. Cooperation of larger farming interest should be pursued with respect to Georgia Agricultural Best Management Practices.

COMMENTS

John Wilson suggested that a 40' totally undisturbed buffer around perennial streams, and a 25' buffer around intermittent streams be mandated in Bibb and Monroe counties with respect to timbering. He also added that EPD should add PCBs to their list of pollutants to test for, if they are not already.

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**Environmental Protection Division of the Department of Natural Resources,
State of Georgia.**

TOGETHER WE CAN MAKE A DIFFERENCE!